US 20020013107A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2002/0013107 A1

Angelini et al. (43) Pub. Date: Jan. 31, 2002

(54) BUOYANCY COMPENSATOR WEIGHT SYSTEM

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(21) Appl. No.: 09/916,414

(22) Filed: Jul. 26, 2001

Related U.S. Application Data

(63) Continuation of application No. 09/628,836, filed on Jul. 31, 2000, now abandoned.

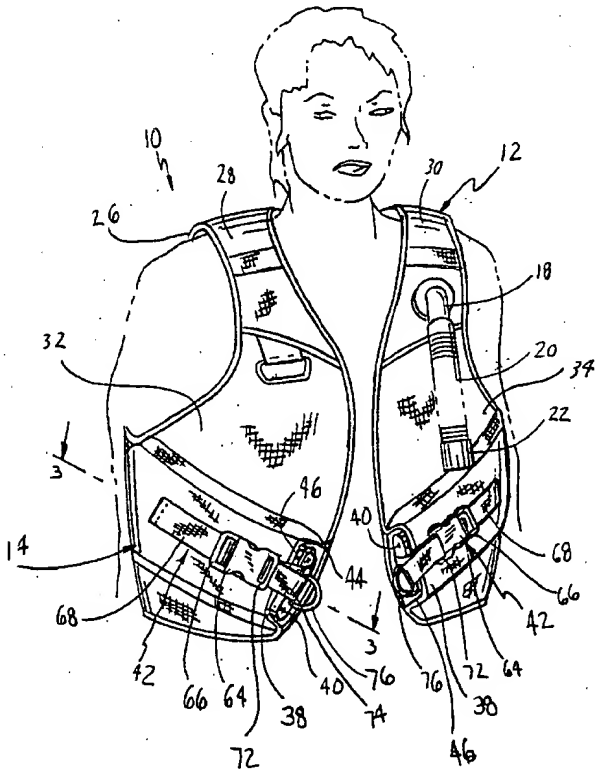
Publication Classification

(51) Int. Cl.[7] B63C 9/08

(52) U.S. Cl. 441/88

(57) ABSTRACT

A buoyancy control system includes an apparel unit worn by a user and including a front panel, a pocket along the front panel having an interior, a weight pouch configured to hold at least one weight and removably received within the interior of the pocket, a first connector portion coupled to the weight pouch and a second connector portion released the couple to the first connector portion. The first and second connector portions form a mechanical lock actuatable between a connected state in which the lock connects a weight pouch to the apparel unit and a disconnected state in which a weight pouch may be removed from the weight pocket by a single manipulation step of the hand of the diver. In one exemplary embodiment, the device further includes an elastic band coupled between the apparel unit and the second connector. The band biases the second connector portion away from the first connector portion such that the band pulls the second connector portion away from the first connector portion upon release of the first and second connector portions. In one exemplary embodiment, the first connector portion and second connector portion comprise a side release connector such that the male prongs of the side release connector, upon being depressed inwardly, eject the second connector portion from the first connector. In one exemplary embodiment, a buckle and a strap couple the first connector portion to the weight pouch. Adjustment of the length of the strap between the buckle and the weight pouch moves the weight pouch within the weight pocket while the first and second connector portions are in the connected state.



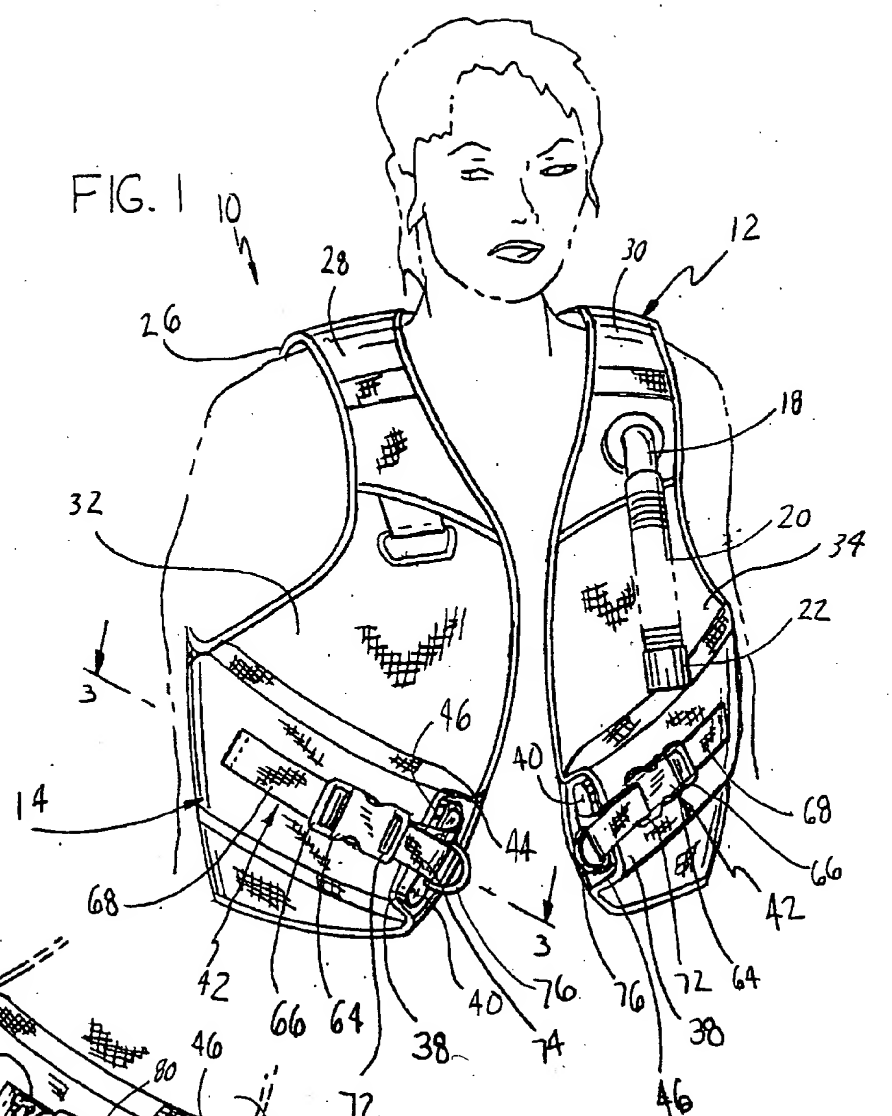

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FIG. 1

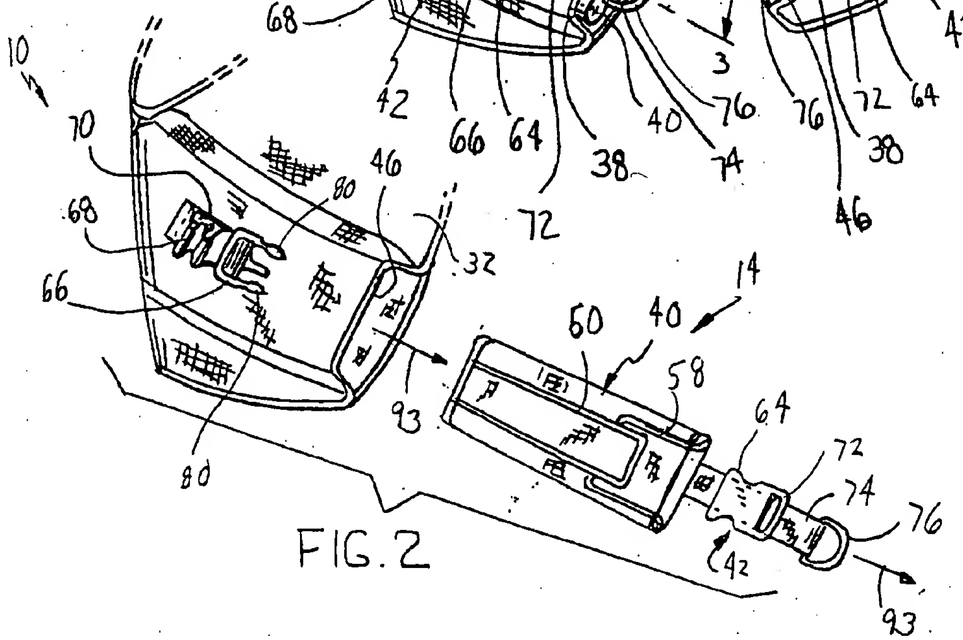
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FIG. 2

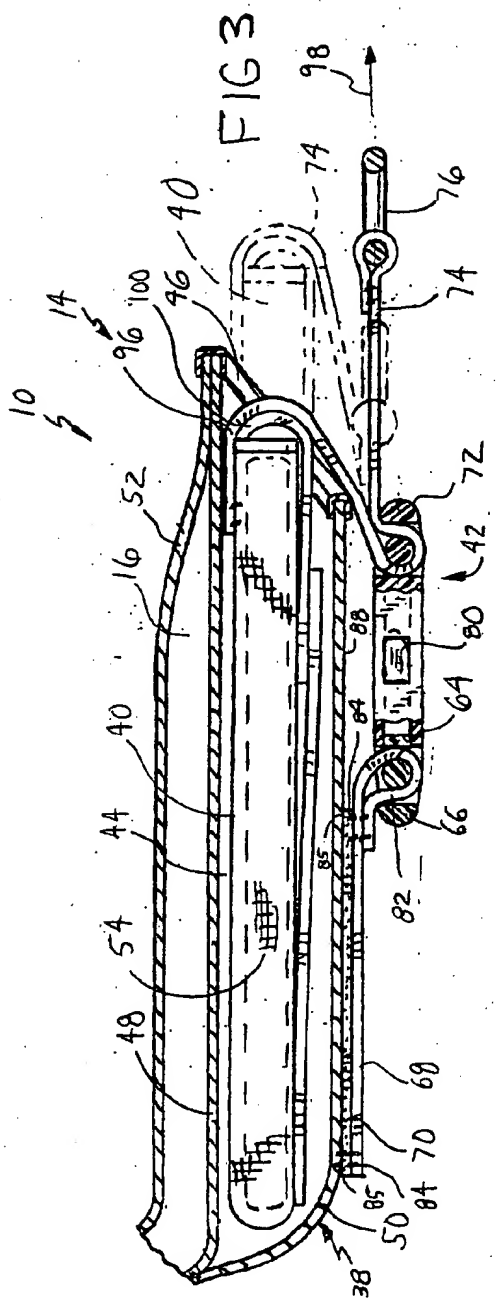
FIG 3
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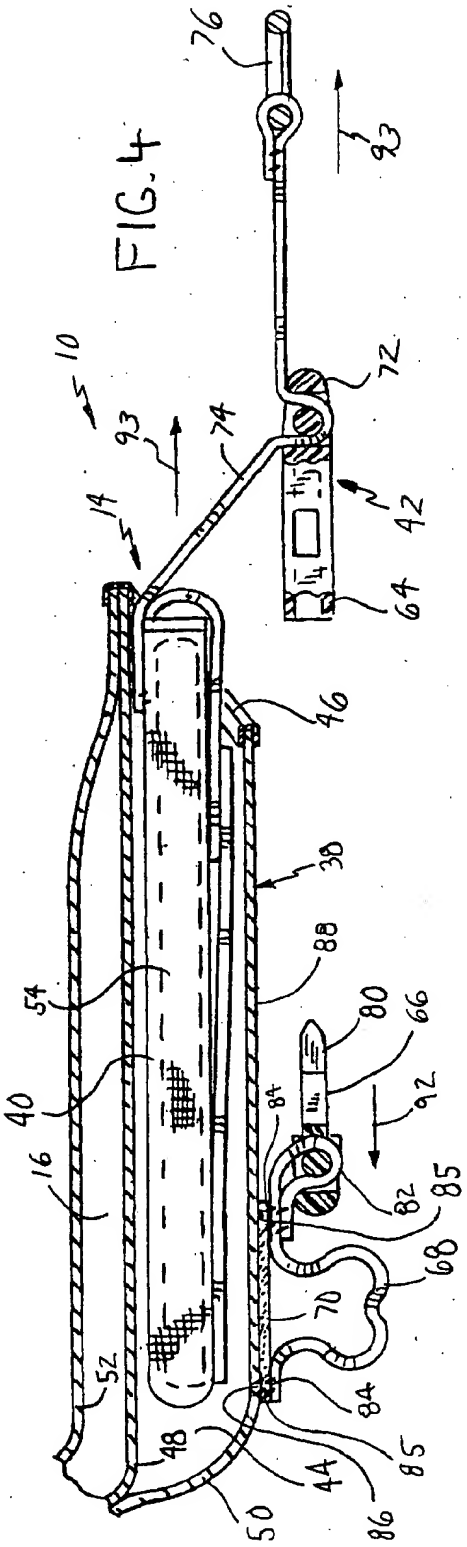
FIG. 4
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BUOYANCY COMPENSATOR WEIGHT SYSTEM

CROSS REFERENCE TO RELATED APPLICATION

[0001] This continuing application claims priority under 35 U.S.C. §120 from U.S. patent application Ser. No. 09/628,836 filed on Jul. 31, 2000 and entitled BUOYANCY COMPENSATOR WEIGHT SYSTEM, the full disclosure of which is hereby incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to buoyancy compensating devices used in underwater diving. In particular, the present invention relates to systems for containing and allowing selective release of weight to adjust buoyancy provided by the system.

BACKGROUND OF THE INVENTION

[0003] A buoyancy control device, more commonly known as a buoyancy compensator, is a standard piece of equipment used by scuba divers to help offset changes in buoyancy during the course of a dive. The buoyancy of a scuba diver during a dive can depend on a number of factors, such as the weight of the diver, the weight of the equipment carried by the diver, the depth of the dive, the temperature of the water, and numerous other factors. Consequently, the buoyancy of the diver can vary significantly during the course of a dive or between dives. A buoyancy compensator helps to offset these changes in buoyancy, thereby making it easier for the diver to maintain or achieve a desired depth. In addition to allowing fine tuning of buoyancy while the diver is underwater, a good buoyancy compensator allows easy surface swimming, stowing of small accessories, and organization of hoses and alternate gas sources. It also helps the diver to streamline his equipment by providing storage pockets and instrument attachment points.

[0004] A buoyancy compensator is typically a vest-like harness that is worn around the diver's torso. It generally includes four major elements: a weighting or weight system, an adjustable gas cell, a means of securing a gas tank, and storage pockets. The weighting system is typically made up of lead weights that are attached about the waist of the diver on a weight belt or contained within pockets mounted at the side panels of the buoyancy control device. The weighting system is used to overcome the buoyancy force exerted on the diver by the water, which then allows the diver to sink. In emergency situations, the weights of the weighting system are removed and dropped such that the diver quickly ascends.

[0005] The gas cell performs a function opposite to that of the weighting system. It is used to increase the buoyancy force exerted by the water, which offsets the negative forces exerted by the weight of the diver and his equipment, thereby assisting the diver to float towards the surface. Inflating the gas cell increases the buoyancy force acting on the diver, and can be done by connecting the gas cell to the gas tank via a valve and a hose and allowing the compressed gas in the gas tank to fill the gas cell, or it can be done by orally inflating the cell by blowing into a hose connected to the gas cell. The weighting system and the gas cell can also be used together to create a condition of equilibrium that allows the diver to maintain a desired depth. The means of securing a gas tank is used to prevent the gas tank from shifting or moving relative to the diver. This helps to ensure a more controlled dive, especially in tight quarters. Pockets are also included in buoyancy compensators because divers need storage compartments for a variety of reasons.

[0006] Those weighting systems which utilize pockets along the side panels of the buoyancy control device to contain weights come in a variety of configurations. Many weighting systems employ upwardly facing pockets to contain the weights or to contain pouches containing the weights. Although easy to load, such pockets are difficult to unload. Other weighting systems employ downwardly oriented pockets or sideways oriented pockets in which pouches containing weights are positioned. Such pouches are usually releasably retained within the pocket by means of a hook and loop fastener (VELCRO). In an emergency situation, the pouches containing the weights are removed and released by simply separating the hook and loop components of the hook and loop fastener, allowing the weight pouch to be removed from the pocket and to be dropped such that the diver immediately ascends. In other instances, the pouches and the weights are removed from the pocket and handed to a diving instructor or to another individual on a watercraft to allow the diver to more easily exit the water and board the watercraft.

[0007] Although such weight systems employing sideways or downwardly oriented pockets containing weight carrying pouches are generally preferred over upwardly oriented pockets, such weighting systems have several drawbacks. First, complete insertion of the weight containing pouch into the pocket is many times difficult due to gravity and friction between the pouch and the interior of the pocket. However, incomplete insertion of the weight pouch into the pocket results in the buoyancy control device being improperly configured which creates discomfort to the user wearing the buoyancy control device and instability. Moreover, incomplete insertion and securemerit of the weight pouch into the pocket may result in the hook and loop fastener becoming accidentally disconnected and may result in the pouch accidentally becoming dislodged from the pocket as a result of the repeated reciprocation of the weight pouch in the pocket.

[0008] Once the user is in the water, it is often easier for the user to readjust the position of the weight pouch in the pocket. Such readjustment generally requires that the hook and loop fastener be disconnected so as to allow the weight pouch to be more completely inserted into the weight pocket. Unfortunately, disconnection of the hook and loop fastener securing the weight pouch to the weight pocket while the user is in the water frequently results in the weight pouch being accidentally dropped and lost.

[0009] A second disadvantage associated with such existing weighting systems employing sidewards or downwardly oriented pockets and weight pouches is that such systems are difficult to operate in time critical situations and have durability concerns. In particular, the hook and loop fasteners commonly employed to secure the weight pouches in the weight pockets are susceptible to wear over time and have limited strength. As a result, the weight pouches may fall out of the pockets. The use of other connectors generally requires multiple steps or hand manipulations to disconnect the weight pouches from the pockets. In many underwater

diving situations, the user simply does not have time or the required dexterity to perform such multiple steps to release the pouches from the pockets. The multiple steps necessary to release the pouches from the pockets is often made more difficult by the movement retarding thick wetsuit or drysuit worn by the diver.

[0010] Thus, there is a continuing need for a buoyancy control device and a weighting system for a buoyancy control device that: (1) enables a weight pouch to be completely inserted into the weight pocket without the risk of the weight pouch being accidentally dropped, (2) that more durably secures the weight pouch to and within the weight pocket, and (3) that enables the user to quickly and easily release the weight pouch from the weight pocket in few steps or hand manipulations and without the risk of the weight pouch being unintentionally dropped.

SUMMARY OF THE INVENTION

[0011] According to one embodiment, a buoyancy control system includes an apparel unit adapted to be worn by a diver. The apparel unit includes a front panel, a pocket along the front panel having an interior and exterior surface defining an opening communicating with the interior. The system further includes a weight pouch configured to hold at least one weight and removably received within the interior of the pocket, a first connector portion coupled to the weight pouch, a second connector portion releasably coupled to the first connector portion and an elastic member having a first portion coupled to the apparel unit and a second portion coupled to the second connector. The member biases second connector portion away from the first connector portion such that the band pulls the second connector portion away from the first connector portion upon release of the first and second connector portions.

[0012] According to another embodiment, a buoyancy control system includes an apparel unit adapted to be worn by a diver including a front panel, a pocket along the front panel having an interior and an exterior surface defining an opening communicating with the interior, a weight pouch configured to hold at least one weight and removably received within the interior of the pocket and an insertion assist mechanism coupled to the weight pouch and apparel unit. The insertion assist mechanism has a selectively adjustable length to move the pouch within the pocket.

[0013] According to another embodiment, a buoyancy control system includes an apparel unit adapted to be worn by a diver, a pocket along a front panel of the apparel unit and having an interior and an exterior surface defining an opening communicating with the interior, a weight pouch configured to hold at least one weight and removably received within the interior of the pocket and a mechanical lock coupled between the weight pouch and the apparel unit. The mechanical lock is actuatable between a connected state in which the lock connects the weight pouch to the apparel unit and a disconnected state in which the weight pouch may be removed from the weight pocket by single manipulation step of the hand of the diver.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] **FIG. 1** is a perspective view of a buoyancy control device including a weighting system and retaining system of the present invention.

[0015] **FIG. 2** is an enlarged fragmentary view of the buoyancy control device of **FIG. 1** illustrating a weight pouch and weight being removed from a weight pocket of the buoyancy control device.

[0016] **FIG. 3** is a section of the buoyancy control device of **FIG. 1** taken along lines **3-3** illustrating repositioning of the weight pouch from an incomplete inserted position shown in phantom to a completely inserted position shown in solid.

[0017] **FIG. 4** is a sectional view of the buoyancy control device of **FIG. 1** taken along lines **3-3** illustrating connector portions of the retaining system in a disconnected state and further illustrating removal of the weight pouch from the weight pocket.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] FIGS. **1-4** illustrate buoyancy control device **10**. **FIG. 1** illustrates buoyancy control device **10** being worn by a diver. Buoyancy control device **10** generally includes apparel unit **12** and weighting systems **14**. Apparel unit **12** is configured to be worn by the diver and provides an adjustable gas cell **16** (shown in **FIG. 3**) which may be selectively inflated or deflated to adjust a buoyancy of the user during a dive. To allow for such adjustment, apparel unit **12** generally includes the means for inflating and deflating gas cell **16**. Such means preferably include elbow tube **18**, inflator hose **20** and mouth piece **22**. Elbow tube **18** is in communication with gas cell **16** and is connected to inflator hose **20**. Inflator hose **20** is connected to mouth piece **22**. Mouth piece **22** enables the user to inflate gas cell **40** orally by channeling air blown into the mouth piece into gas cell **16**. Mouth piece **22** includes a valve mechanism which allows the user to release gas from cell **16** by pushing a button. Various other conventionally known means for selectively inflating and deflating gas cell **16** may be provided in apparel unit **12**.

[0019] Although not shown, apparel unit **10** additionally includes a tank mounting mechanism such as that described in copending U.S. patent application Ser. No. 09/629,604, entitled Buoyancy Control Device Storage Pockets, filed on Jul. 31, 2000 by Sergio A. Angelini, the full disclosure which, in its entirety, is hereby incorporated by reference.

[0020] In an exemplary embodiment, apparel unit **12** is in form of a vest including a back panel **26**, a right shoulder strap **28**, a left shoulder strap **30**, a right front panel **32** and a left front panel **34**. Back panel **26** is a panel that covers the diver's back when buoyancy control device **10** is worn by the diver. Back panel **26** is connected to right and left shoulder straps **28** and **30** and right and left from panels **32**, **34**.

[0021] In alternative embodiments, buoyancy control for apparel unit **12** may be in the form of a pull-over rather than a vest. Instead of having a right and left panel, apparel unit **12** may have one front panel that is attached to each side of back panel **26** and covers the area of the divers body that both right front panel **32** and left panel **34** are shown covering in **FIG. 1**. In such a one front panel configuration, apparel unit **10** is pulled down over the diver's head. In another embodiment, apparel unit **12** includes only a single right or left panel. In such an embodiment, rather than

having a front panel extend from each side of the back panel **26** and terminate near the center of the divers torso, and show in FIG. **1**, the single right or left panel extends from one side of back panel **26** and terminates on the other side of back panel **26**. In yet another alternative embodiment, apparel unit **12** includes a right and left front panel, but the right and left front panel do not necessarily terminate near the center or mid-sagital plane of the diver's body. As will now be appreciated, apparel unit **10** may have a variety of different configurations enabling buoyancy control of device **12** to be worn by the diver.

[0022] Weighting systems **14** are integrated into apparel unit **12** and enable the user or diver to compensate for excess positive buoyancy (given by wetsuit/drysuit and/or natural body composition) prior to a dive by adding a proper amount of weights. They also allow quick release in case of an emergency. Weighting systems **14** are disposed on each of right panel **32** and left front panel **34** and are substantially identical to one another. For ease of discussion, weighting system **14** on front panel **32** is discussed. Weighting system **14** generally includes pocket **38**, weight pouch **40** and retaining system **42**. Pocket **38** extends along front panel **32** and defines an interior **44** sized to receive weight pouch **40** and an opening **46** through which weight pouch **40** is inserted into interior **44**. In the exemplary embodiment, interior **44** and opening **46** are oriented in a downward direction when device **10** is being worn by the diver. As a result, weight pouch **40** and weight **54** within weight pouch **40** can be removed from interior **44** and released.

[0023] As best shown by **FIG. 3**, pocket **38** is preferably formed by panels **48** and **50** which are sewn together to define interior **44** and opening **46**. As further shown by **FIG. 3**, panel **48** is secured to panel **52** by stitching or other securement means to form the airtight gas cell **16**. As will be appreciated, the volume providing gas cell **16** and the volume providing pocket **38** may be formed by greater or fewer component panels secured to one another in any of variety of different ways.

[0024] Weight pouch **40** contains a removable weight **54** and is sized to be removably positioned within interior **44** of pocket **38**. In the exemplary embodiment, weight pouch **40** includes a pair of flaps **58**, **60** which are releasably secured to one another to close an opening (not shown) through which weights are positioned in weight pouch **40**. As will be appreciated, weight pouch may have any of a variety of alternative size, shapes and configurations, as well as closing mechanisms, so long as weight pouch **40** is removably positioned within interior **44** of pocket **38**.

[0025] Retaining system **42** releasably retains weight pouch **40** and its weight **54** within interior **44** of pocket **38**. Retaining system **42** generally includes connector portion **64**, connector portion **66**, band **68**, band **70** (shown in **FIG. 3**), buckle **72**, strap **74** and ring **76**. Connector portion **64** is coupled to weight pouch **40** while connector portion **66** is coupled to apparel unit **12**. Connector portions **64** and **66** are configured to be releasably connected to one another so as to releasably secure weight pouch **40** to apparel unit **12**. Connector portions **64** and **66** form a mechanical lock which is actuatable between a connected state and a disconnected state by a single manipulation step whereby connector portions **64** and **66** may be disconnected without requiring that the hand of the user be repositioned multiple times to perform multiple manipulations. In the exemplary embodiment, connector portions **64** and **66** comprise a conventionally known side-release connector, whereby connector portions **64** and **66** may be disconnected from one another by simply pinching or squeezing prongs **80** inwardly. Upon connector portions **64** and **66** being disconnected, prongs **80** apply resilient force to the other of the connector so as to eject themselves from the other of the connector.

[0026] In the exemplary embodiment, connector portion **66** comprises a male portion of a side release connector while connector portion **64** comprises a female portion of a side release connector which receives connector portion **66**. Because connector portion **64** preferably comprises the female portion of a side-release connector, the user's hand remains gripped about connector portion **64** rather than connector portion **66** upon connector portions **64** and **66** being disconnected. Since connector portion **64** is coupled to weight pouch **40**, this arrangement further enables the diver to keep control of weight pouch **40**. As a result, the diver may more easily pull and withdraw weight pouch **40** from pocket **38** to release and drop weight pouch **40** during a dive or may more easily withdraw weight pouch **40** from pocket **38** to hand weight pouch **40** to a diving instructor or another person on board a water craft as the water craft is being boarded by the diver after a dive to enable the diver to more easily board the water craft.

[0027] Although less desirable, connector portion **66** may alternatively comprise a female portion of a side release connector and connector portion **64** may alternatively comprise a male portion of a side release connector. Moreover, connector portions **64** and **66** may comprise other conventionally known mechanical locks which are actuatable from a connected state to a disconnected state by means of a single manipulation step. Because connector portions **64** and **66** form a mechanical lock releasable securing weight pouch **40** to apparel unit **12**, weight pouch **40** is better retained within pocket **38** since the mechanical lock provided by connector portions **64** and **66** is more durable and wear resistant than conventionally-used hook and loop fastener arrangements. At the same time, because connector portions **64** and **66** provide a mechanical lock that is actuatable from the connected state to the disconnected state through a single manipulation step, weight pouch **40** and its weight **54** may be more easily uncoupled or disconnected from apparel unit **12** and released to adjust the buoyancy of the diver. This is especially important in emergency situations.

[0028] Bands **68** and **70** are coupled to connector portion **66** and to apparel unit **12**. Bands **68** and **70** are best shown in **FIGS. 3 and 4**. Band **68** comprises a length of material having a first portion **82** coupled to connector portion **66** and at least one portion **84** coupled to band **70**. Band **68** is formed from a generally inelastic material such as nylon.

[0029] Band **70** extends adjacent to band **68** and has a first portion **85** coupled to band **68** and a second portion **86** coupled to apparel unit **12**. An exemplary embodiment, portion **86** is stitched to an exterior surface **88** of panel **50** of pocket **38**. Band **70** is formed from an elastic material and is preferably coupled to apparel unit **12** such that band **70** is stretched when connector portions **64** and **66** are in the connected state as shown in **FIG. 3**. As shown in **FIGS. 2 and 4**, upon disconnection of connector portions **64** and **66**, band **70** resiliently returns to its initial length. As a result,

band **70** further assists in the ejection of connector portion **66** from connector portion **64** to ensure a complete separation of connector portions **64** and **66**. As shown in **FIGS. 2** and **4**, band **70** resiliently returns to its initial length, causing connector portion **66** to be withdrawn away from connector portion **64** in the direction indicated by arrow **92**. This complete separation of connector portions **64** and **66** enables the diver to more reliably grasp connector portion **64** to pull weight pouch **40** and its weight **54** from pocket **38** in the direction indicated by arrow **93** and minimizes the need for visual confirmation by the diver to ensure that the diver is not accidentally grasping connector portion **66**.

[0030] Although retaining system **42** is illustrated as including bands **68** and **70**, retaining system **42** may alternatively include other members in lieu of bands **68** and **70**. For example, bands **68** and **70** may alternatively be replaced with webbing or a combination of a band and webbing. Although less desirable, band **68** and elastic band **70** may be replaced with a single elastic band having a first portion secured to connector portion **66** and a second portion secured to apparel unit **12**. Although less desirable, elastic band **70** may be omitted such that band **68** secures connector portion **66** to apparel unit **12** or such that connector portion **66** is secured directly to apparel unit **12**. In such an alternative embodiment, the resilient prongs **80** of connector portion **66** act against connector portion **64** upon being inwardly squeezed to eject connector portion **66** away from connector portion **64**.

[0031] Buckle **72** and strap **74** serve as an insertion assist to facilitate complete insertion of weight pouch **40** into interior **44** of pocket **38**. Buckle **72** is preferably integrally formed as a single unitary body with connector portion **64**. Alternatively, buckle **72** may be provided as a separate independent component which is itself strapped or otherwise secured to connector portion **64**.

[0032] Strap **74** is an elongate band or webbing having a first end **96** coupled to weight pouch **40** and a second opposite end threaded through buckle **72** and secured to ring **76**. Strap **74** couples weight pouch **40** to buckle **72** which is in turn coupled to connector portion **64**. Strap **74** has a first length extending between weight pouch **40** and buckle **72** and a second length extending beyond buckle **72** and ending at ring **76**. Ring **76** preferably comprises a D-ring and facilitates grasping and pulling of strap **74**. As will be appreciated, ring **76** may be replaced with any other variety of alternative structures which serve as a handle for enabling strap **74** to be grasped. Ring **76** further prevents complete withdrawal of strap **74** from buckle **72**. Although less desirable, ring **76** may be omitted, wherein strap **74** is directly grasped by the diver.

[0033] As shown in **FIG. 3**, the movement of weight pouch **40** from the incompletely inserted position shown in phantom to the completely inserted position shown in solid may be achieved by simply pulling strap **74** in the direction indicated by arrow **98**. In particular, pulling strap **74** in the direction indicated by arrow **98** lengthens the second length of strap **74** extending between buckle **72** and ring **76** and shortens the length of strap **74** extending between weight pouch **40** and buckle **72**. As the first distance of strap **74** between buckle **72** and weight pouch **40** is shortened, the length of strap **74** most closely adjacent to weight pouch **96** is drawn towards buckle **72** to also draw end **100** of weight pouch **40** towards buckle **72**. As a result, pulling strap **74** through buckle **72** moves weight pouch **40** towards the back of pocket **38** to assist in the complete insertion of weight pouch **40** and its weight **54** into interior **44** of pocket **38**. This can be accomplished while connector portions **64** and **66** remain in the connected state and while weight pouch **40** remains connected to apparel unit **12**. Unlike conventional hook and loop fastener systems, retaining system **42** enables the extent of insertion of weight pouch **40** in pocket **38** to be adjusted without the risk of weight pouch **40** accidentally falling out of pocket **38** during such adjustment. Although less desirable, buckle **72** and strap **74** may alternatively be replaced with a simple strap having a first end connected to weight pouch **40** and a second end connected to connector portion **64**.

[0034] Overall, retaining system **42** of weighting system **14** provides a more durable and easier to use weighting system. In particular, buckle **72** and strap **74** enable the position of the weight pouch **40** and weight **54** to be adjusted and to be more completely inserted into pocket **38** without the risk of weight pouch **40** being accidentally dropped. Because connector portions **66** and **64** form a mechanical lock securing weight pouch **40** to apparel unit **12**, this securement of pouch **42** of apparel unit **12** is more durable as compared to conventional hook and loop fasteners arrangements. Because connector portions **64** and **66** actuate from a connected to a disconnected state with a single manipulation step, the user does not need to reposition his or her hands, allowing faster and more reliable disconnection and removal of the weight pouch from the pocket with a reduced risk of the weight pouch being unintentionally dropped.

[0035] Although the present invention has been described with reference to preferred embodiments, workers skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention. Because the technology of the present invention is relatively complex, not all changes in the technology are foreseeable. The present invention described with reference to the preferred embodiments and set forth in the following claims is manifestly intended to be as broad as possible. For example, unless specifically otherwise noted, the claims reciting a single particular element also encompass a plurality of such particular elements.

What is claimed is:

1. A buoyancy control system comprising:

an apparel unit adapted to be worn by a diver, the apparel unit including a front panel;

a pocket along the front panel, the pocket having an interior and an exterior surface defining an opening communicating with the interior;

a weight pouch configured to hold at least one weight and removably received within the interior of the pocket;

a first connector portion coupled to the weight pouch;

a second connector portion releasably coupled to the first connector; and

an elastic band coupled between the apparel unit and the second connector portion, wherein the band biases the second connector portion away from the first connector portion such that the band pulls the second connector

portion away from the first connector portion upon release of the first and second connector portions.

2. The system of claim 1, including an insertion mechanism coupled between the weight pouch and the first connector portion, the mechanism having a selectively adjustable length to move the pouch in the pocket.

3. The system of claim 2, wherein the mechanism comprises a buckle coupled to the first connector portion and a strap coupled to the weight pouch and threaded through the buckle.

4. The system of claim 1, wherein the first connector portion comprises a female portion of a side release connector and wherein the second connector portion comprises a male portion of a side release connector.

5. The system of claim 1, wherein the elastic band is coupled to the exterior surface of the pocket.

6. The system of claim 1, wherein the opening faces in a sideways direction.

7. The system of claim 1, including a gas cell formed in the apparel unit and configured to retain gas to provide the apparel unit with buoyancy.

8. The system of claim 7, including means for selectively inflating and deflating the gas cell to adjust the buoyancy of the apparel unit.

9. The system of claim 1, wherein the apparel unit comprises a vest.

10. A buoyancy control system comprising:

an apparel unit adapted to be worn by a diver, the apparel unit including a front panel;

a pocket along the front panel, the pocket having an interior and an exterior surface defining an opening communicating with the interior;

a weight pouch configured to hold at least one weight and removably received within the interior of the pocket; and

a mechanical lock coupled between the weight pouch and the apparel unit, the mechanical lock being actuatable between a connected state in which the lock connects the weight pouch to the apparel unit and a disconnected state in which the weight pouch may be removed from the weight pocket by a single manipulation step of a hand of the diver.

11. The system of claim 1, wherein the mechanical lock includes a first connector portion coupled to the weight pouch and a second connector portion coupled to the apparel unit, wherein the first connector portion and the second connector portion are joined when the mechanical lock is in the connected state and wherein the first connector portion and the second connector portion are separated when the mechanical lock is in the disconnected state.

12. The system of claim 11, wherein one of the first connector portion and the second connector portion receives the other of the first connector portion and the second connector portion and wherein one of the first connector portion and the second connector portion ejects the other of the first connector portion and the second connector portion upon the mechanical lock being actuated to the disconnected state.

13. The system of claim 12, wherein the mechanical lock comprises a side-release connector.

14. The system of claim 12, wherein the first connector portion receives the second connector portion and wherein the second connector portion is ejected from the first connector portion when the mechanical lock is actuated to the disconnected state.

15. The system of claim 10, including an insertion assist mechanism coupled between the weight pouch and the first connector portion, the securement member having a selectively adjustable length to move the pouch in the pocket.

16. The system of claim 15, wherein the securement member comprises a buckle coupled to the first connector portion and a strap coupled to the weight pouch and threaded through the buckle.

17. The system of claim 11, including an elastic band coupled between the apparel unit and the second connector, wherein the band biases the second connector portion away from the first connector portion such that the band pulls the second connector portion away from the first connector portion upon release of the first and second connector portions.

18. The system of claim 10, including a selectively inflatable and deflatable gas cell formed in the apparel unit to provide the apparel unit with an adjustable buoyancy.

19. The system of claim 10, wherein the apparel unit comprises a vest.

20. A buoyancy control system comprising:

an apparel unit adapted to be worn by a diver, the apparel unit including a front panel;

a pocket along the front panel, the pocket having an interior and an exterior surface defining an opening communicating with the interior;

a weight pouch configured to hold at least one weight and removably received within the interior of the pocket; and

an insertion assist mechanism coupled to the weight pouch and the apparel unit, the mechanism having a selectively adjustable length to move the pouch in the pocket.

21. The system of claim 20, wherein the securement member is releasably coupled to the apparel unit.

22. The system of claim 20, wherein the securement member comprises a buckle coupled to the apparel unit and a strap coupled to the weight pouch and threaded through the buckle.

23. The system of claim 22, including a first connector portion coupled to the buckle and a second connector portion coupled to the apparel unit and releasably coupled to the second connector portion.

24. The system of claim 23, including an elastic band coupled between the apparel unit and the second connector portion, wherein the band biases the second connector portion away from the first connector portion such that the band pulls the second connector portion away from the first connector portion upon release of the first and second connector portions.

25. The system of claim 23, wherein the first connector portion comprises one of a male portion and a female portion of a side release connector and wherein the second connector portion comprises the other of a male portion and a female portion of a side-release connector.

26. The system of claim 25, wherein the first connector portion comprises the male portion of a side-release connector.

27. A buoyancy control system comprising:

an apparel unit adapted to be worn by a diver, the apparel unit including a front panel;

a pocket along the front panel, the pocket having an interior and an exterior surface defining an opening communicating with the interior;

a weight removably positioned within the interior of the pocket; and

a mechanical lock releasably coupling the weight to the apparel unit.

28. The system of claim 26, including a weight pouch removably receiving the weight and removably positioned within the pocket.

29. The system of claim 28:

at least one first strap interconnecting the apparel and the mechanical lock; and

at least one second strap interconnecting the mechanical lock and the weight pouch.

30. The system of claim 29, wherein the mechanical lock comprises a side-release connector.

31. The system of claim 30, wherein the side-release connector includes a male portion coupled to the at least one first strap and a female portion coupled to the at least one second strap.

32. The system of claim 30, wherein the at least one first strap is elastic.

33. The system of claim 30, including an insertion assist mechanism coupled to the weight pouch in the apparel unit, the mechanism having a selectively adjustable length to move the pouch in the pocket.

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